

Atty Dkt. No.: 10990105-5
USSN: 09/302,898

REMARKS

In view of the following remarks, the Examiner is requested to allow Claims 1-18 and 20-48, the only claims pending and under examination this application following entry of the above amendments.

Claims 1, 18, 25, 39, and 48 have been amended to clarify the claim language. Specifically, Claims 1, 18, 25, and 39 have been amended to specify that an array of polynucleotide containing fluid droplets is deposited on a substrate **in accordance with a target array pattern determined by a processor in communication with the deposition system**. Support for these amendments may be found throughout the specification and claims as originally filed, for example, page 3, line 32 and at page 16, lines 12-16.

Accordingly, no new matter has been added by these amendments and their entry is respectfully requested.

Claims 1-18 and 20-48 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Solely in order to expedite prosecution and advance the case to issuance, Claims 1, 18, 25, and 39 have been amended to clarify that the array of polynucleotide containing fluid droplets is deposited on the substrate **in accordance with a target array pattern determined by a processor in communication with the deposition system**. Such amendments should not be viewed as an acquiescence by the Applicants to the position of the Office. However, in view of the above amendments it is respectfully submitted that this rejection may be withdrawn.

Claims 1-3, 5-8, 10-13, 25, 27, 29-31, and 39-42 have been rejected under 35 U.S.C. 102(a) as being clearly anticipated by Graves et al [Anal. Chem. 70:5085 (1998)].

According to the MPEP, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Additionally, the identical invention must be shown in as complete detail as is contained in the claim. See MPEP 2131.

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The present invention is directed to methods for fabricating polynucleotide arrays. Specifically, the method includes operating a polynucleotide deposition system to deposit an array of polynucleotide containing fluid droplets on the substrate in accordance with a target array pattern determined by a processor in communication with the deposition system, allowing for the deposited droplets to dry and thereby yield an actual pattern of dried spots; observing the actual pattern of dried spots; and comparing the actual pattern with the target pattern. Hence, a feature of the presently claimed invention is a comparison of an actual dried deposited pattern with a target array pattern. The target array pattern is not an actual deposited array pattern, but a pattern or map that employed by the deposition device in depositing an actual pattern.

As will be shown below, the Graves publication never shows a comparison of an actual deposited dried array pattern with a target array pattern. In making this rejection the Office is confusing an "actual array pattern" as disclosed in Graves with the target array pattern claimed by the Applicants. Accordingly, the Office erroneously asserts that Graves teaches a comparison of an actual array pattern with a target array pattern when in fact Graves only discloses a comparison of "actual deposited array patterns".

The Graves publication is directed to a general method for preparing microhybridization arrays. In the production of an array, Graves teaches the capillary deposition of probes on a substrate at precise locations, so as to generate a reliable and reproducible deposition system. See page 5085, second column. However, nowhere does Graves teach a target array pattern determined by a processor in communication with the deposition system. Fundamentally, Graves is not concerned with fabricating arrays according to a target array pattern. The Office equates the deposition of a probe at a "precise" location, as disclosed in Graves, with a target array pattern as claimed by the Applicants. However, this is not a proper way to read Graves.

As set forth in Graves, the deposition of a probe at a "precise location" is simply the fabrication of the "actual array pattern" as taught by the Applicants. As set forth in the Applicant's specification a target array pattern is a pattern for operating and coordinating deposition of polynucleotides provided from a processor that causes the deposition system to execute instructions for which types and volumes of fluids get deposited at what

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locations and in what dimensions. See page 16, lines 5-27. No such element is disclosed in Graves and to assume that such an element is taught simply because Graves deposits a "microdroplet" at a "precise location" is erroneous absent teaching as to what Graves means by "precise location," how such a location is derived, and its relation to the overall fabrication process. Hence, because Graves does not teach a target array pattern, it further does not teach a comparison of an actual array pattern with a target array pattern.

Accordingly, because Graves does not teach every element of the presently claimed invention it does not anticipate the present invention. Applicants, therefore, respectfully request reconsideration and withdrawal of the 102 (a) rejection of Claims 1-3, 5-8, 10-13, 25, 27, 29-31, and 39-42 over Graves.

Claim 46 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Baldeschwieler et al (6,015,880); taken in view of Weber et al (4,328,504). In making this rejection, the Examiner asserts that Baldeschwieler teaches all of the elements of the claimed invention, but for the error correction element, for which element the Examiner looks to Weber.

Weber is directed to traditional printing methods and not to methods of fabricating biopolymer arrays.

As will be demonstrated below, when the relevant case law is applied to the facts of the present application, the only reasonable conclusion is that one of skill in the art would not combine the teaching of Baldeschwieler with Weber to arrive at the claimed invention because Weber is non-analogous art to the claimed invention of the present application.

With respect to non-analogous art, the MPEP at § 2141 states:

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992) ("A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals,

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logically would have commended itself to an inventor's attention in considering his problem."); * *Wang Laboratories Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993); and *State Contracting & Eng'g Corp. v. Condotte America, Inc.*, 346 F.3d 1057, 1069, 68 USPQ2d 1481, 1490 (Fed. Cir. 2003) (where the general scope of a reference is outside the pertinent field of endeavor, the reference may be considered analogous art if subject matter disclosed therein is relevant to the particular problem with which the inventor is involved).

The Applicants contend that Weber is not in the same field of the Applicant's endeavor and is not reasonably pertinent to the particular problem with which the inventor of the present claims was concerned. As such, the Applicants respectfully submit that Weber is not a proper reference to combine with Baldeschwieler because it is non-analogous art to the field of the present application.

The field of the Applicants' endeavor with respect to the presently claimed invention is related to the fabrication of addressable biopolymer arrays.

In contrast, Weber is directed to depositing ink on paper.

As such the technical field of Weber constitutes non-analogous art to that of the Applicants in the present application.

Furthermore, for the following reasons one of skill in the art would not find Weber to be reasonably pertinent to the problem with which the inventor was concerned. Specifically, the problem that the inventor was concerned in the present application was how to deposit aqueous fluids of biopolymers or precursors thereof onto a surface to produce an array for use in biotechnology applications.

In contrast, Weber is concerned with printing ink, where ink is clearly not an aqueous fluid of biopolymers or precursors thereof. As such, Weber is concerned with depositing a completely different type of fluid for a completely different purpose.

Accordingly, one of skill in the art at the time the present application was filed would not view Weber as being reasonably pertinent to the problem with which the inventor was concerned in the present application.

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Accordingly, because Weber is in a different technical field from the field of the Applicant's endeavor and one of skill in the art would not view Weber as reasonably pertinent to the particular problem with which the inventor of the present application was concerned, under MPEP at § 2141 Weber is non-analogous art to the field of the present invention and therefore not properly useable in a rejection of the claims of the present application.

Furthermore, even if Weber is properly combinable with Baldeschwieler, which it is not, one of skill in the art would not do so because there is no motivation to combine the cited references in the manner suggested by the Office.

Baldeschwieler provides no teaching or suggestion, and therefore has no appreciation, of the problems that may arise from discrepancies between an actual and target array pattern of biopolymers deposited on a substrate. Therefore, one using Baldeschwieler's teachings as a guide for producing arrays would not be motivated to go the extra step of correcting for errors so as to reduce discrepancies between the actual and target array pattern, because one would not appreciate that such discrepancies, if present, would have any effect on the usability of the array.

Further still, one using Baldeschwieler's teachings as a guide for producing arrays would actually be motivated to not go to the extra step of correcting for errors, because without appreciating the nature and significance of the errors that can occur during array fabrication, the added step of correcting for such errors would add to the cost of manufacturing the array with little recognized benefit. Accordingly, one would not be motivated to combine the teachings of Baldeschwieler with Weber to arrive at the invention of these claims because there would be no need to do so, as the specific problem that is solved by the present invention was not appreciated by the prior art, and the expense of doing so would be high while the expected benefit would be non-existent.

Accordingly, Claim 46 is not obvious under 35 U.S.C. § 103 (a) over Baldeschwieler in view of Weber and this rejection may be withdrawn.

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Obviousness Double-Patenting

Claims 1-3, 5-12, 25, 29-31, 39-43, and 46 have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2, 3, 8, 10, 13, 14, and 50 of co-pending Application No. 09/359,527. Accordingly, filed herewith is the requisite terminal disclaimer, in view of which, the Applicant respectfully request this rejection be withdrawn.

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CONCLUSION

The Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone Dianne Rees at (650) 485-5999.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078.

Respectfully submitted,

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Enclosure: Terminal Disclaimer over Application Serial No. 09/359,527

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